



Illinois Department of Transportation

Division of Highways / Bureau of Construction
2300 South Dirksen Parkway, Springfield, Illinois 62764

Subject:
Project Acceleration

CONSTRUCTION MEMORANDUM 99-5

Effective: **April 1, 1999**

Expires: **Indefinite**

PURPOSE

This memorandum prescribes procedures for directing and compensating the Contractor for IDOT-directed acceleration.

APPLICABILITY

Procedures herein apply to all contracts awarded by the Department of Transportation under Bureau of Construction supervision.

SUMMARY

As required by Article 108.03, Prosecution of the Work, the "work shall be prosecuted in such a manner and with such a supply of materials, equipment and labor as is considered necessary to ensure its completion according to the time specified in the contract." If the Contractor falls behind schedule, and the delay is Contractor's responsibility, then the Contractor is expected and required to accelerate his or her progress as necessary to bring progress back on schedule, with no additional compensation due. As stipulated in Article 108.08 the "Contractor's plea that insufficient time was specified is not a valid reason for extension of time."

However, when the Department causes a delay in completion, such as by the addition of extra work on the critical path, or when for public convenience the Department suspends the work, the Contractor is normally due an adjustment of the contract time limit.

At the Department's discretion, rather than extend the estimated or contract completion date, the contractor may be directed to accelerate progress in the work. The direction to accelerate must be approved in the central office, as noted in Construction [Memorandum No. 4](#), Contract Changes - Articles 104.02 and 109.04.

The purpose of Department-directed acceleration is, essentially, an attempt to "buy back" time that would have been due the Contractor. The Department recognizes that there are direct and indirect expenses involved in accelerating the work, which are not accounted for in the bid prices. Payment for acceleration is intended to make the contractor whole for legitimate expenses which the contractor incurs due to the acceleration: expenses which are above and beyond what the Contractor would have incurred at the Contractor's established or expected rate of progress.

For acceleration authorized and directed by the Department, the Contractor will be reimbursed for the following items:

- Premium time worked due to the acceleration. It is obviously less expensive for the Contractor to perform work at standard labor rates rather than at premium overtime rates. Premium time, for the purposes of this memorandum, is the additional wage paid for hours worked at the overtime rates. For example, if a person works a 50 hour week, and 10 of those hours are paid at time-and-a-half, then the premium time paid is 10 times one-half (i.e. the $\frac{1}{2}$ part of 1-1/2 OT wage rate) times the basic hourly wage rate.
- Premium charges for material delivery. For some materials there are additional charges for delivery outside normal business hours, such as on weekends. Reimbursement will not include the 15% markup for materials that is included on normal force account bills.
- Lost productivity or efficiency for project personnel and equipment due to working prolonged periods of overtime. Studies by the Army Corps of Engineers have shown that working extended periods of overtime results in a loss of productivity of jobsite personnel. Unanticipated loss of productivity cannot be accounted for in the Contractor's contract bid prices. Likewise, when an equipment operator is involved in the acceleration, the equipment is not being used as efficiently.
- Additional administrative costs necessary to monitor overtime, maintain appropriate documentation and produce invoices for the acceleration. Note that this type of expense is already included in the labor and material markups paid on standard force account billings.

PAYMENT PROCEDURES

There are three methods of paying for accelerated work: agreed unit price, force account, and contract bid prices plus a modified force account.

Agreed Unit Price

Agreed unit prices for the work paid on an accelerated basis may be negotiated between the Department and the Contractor. These unit prices will include all costs associated with the work, including acceleration costs.

When the Contractor submits a proposed unit price in this manner, the Contractor should show a breakdown of the various costs involved in the unit price. The basic cost of the work must still meet the guidelines of acceptable unit prices. The Department must be able to evaluate the reasonableness of the proposed prices.

An agreed unit price is an acceptable method of payment only when the Contractor's method of accelerating is relatively uniform or the needed efforts are definable.

Force Account

When there are no contract unit prices for the work that is being accelerated, and the entire accelerated work is paid on a force account basis, then premium labor charges, premium material delivery charges, and office overhead expenses are already included in the normal force account billing procedures. Also, since the force account

billing covers the entire period of acceleration, loss of efficiency is already taken into account so no separate markup for this loss is allowed.

Contract Unit Prices Plus Modified Force Account

If contract unit prices already exist for the work, and no agreement can be reached on an accelerated unit price, then the work is to be paid at the contract prices plus a modified force account billing. In this case, the modified force account will include only the additional charges associated with the accelerated work:

- Premium wages for work time over and above the contractor's normal schedule. The "normal" schedule is the schedule already established by the Contractor, or the reasonable, estimated schedule shown on the approved progress schedule, if no work of this type has been performed yet. The premium wages paid in this way include only that portion of the wages incurred because of the accelerated schedule. It is assumed that the contract unit prices include all wages, etc. necessary to perform the work at the rate of progress shown on the contractor's progress schedule.

For example, suppose the Contractor normally works a 5 day, 40 hour workweek, and the Contractor expected to perform certain pay item work in those five days. If the Department directs the Contractor to compress the work scheduled for that week into four days instead of five, then the Contractor may be required to pay overtime rates on eight of those forty hours. Since the Contractor expected to complete the work at standard wage rates, the additional overtime wages can be attributed to IDOT's direction to accelerate. The premium wages paid for acceleration are the difference between the total wages paid, and the unaccelerated wage rates that the Contractor would normally have paid.

- Documented hours for office staff to perform additional work required to monitor, document and invoice acceleration. Generally, there is additional clerical work associated with acceleration, over and above the normal clerical work needed to support the Contractor's normal work schedule.
- Documented premium charges for delivery of materials in order to meet the accelerated project schedule. For example, weekend delivery of concrete may include an additional charge from the producer. If the accelerated schedule causes the Contractor to incur such charges that would not otherwise have been incurred, then the Department as part of the acceleration payment pays these charges.
- Loss of productivity, or efficiency, for both personnel and equipment, in accordance with the payment schedule described below.
- The modified force account billing from the Contractor must be notarized. Certified copies of the applicable payroll records are to be submitted with the Contractor's bill. The Resident should use form [BC 635](#), Extra Work Daily Report, or a comparable form, to document the accelerated hours in a manner similar to normal force account work.

LOSS OF EFFICIENCY

A number of studies have shown that when workers work extended hours for an extended number of days, the productivity or efficiency of the workers begins to decrease. The effect of this is that it becomes more expensive to complete the same amount of work. This loss of efficiency affects all of the work by those persons working extended hours. Loss of efficiency affects not only the workers, but also the production of equipment, when the operator of that equipment is affected by the loss of efficiency. The studies also note that worker efficiency quickly returns to normal levels once the schedule returns to normal hours.

Loss of efficiency is recognized as actually occurring, but it is very difficult to document. In order to ease both the documentation burden for the Contractor and the verification burden for the Department, the Department has established the following method of adjusting payment to account for this. Note that this procedure is to be used only in the case of Department-directed acceleration. If the Contractor submits a claim for loss of efficiency, for work not directed by the Department, then the Contractor will still be required to provide detailed documentation of actual loss to support the claim.

Payment for loss of efficiency will be paid by adjusting the labor and equipment rates by a loss of efficiency (LOE) factor. LOE factors will be applied to those individuals, and any equipment operated by those individuals, who work 5 or more hours overtime per week in excess of either the Contractor's normal weekly work schedule or 40 hours, whichever is greater, when the accelerated schedule extends for two or more weeks.

Loss of Efficiency (LOE) Factor

Overtime Hours Worked, OT in excess of normal work week	% Additive to Straight Time Hours (Weeks 2-4)	% Additive to Straight Time Hours Beginning Week 5
Less than 5 hours	0	0
5 hours or more, but less than 15 hours	2.5	5
15 hours or more, but less than 25 hours	5.0	10
25 hours or more	7.5	15

The LOE factor will be applied to each individual, starting with the second consecutive week that individual has been performing the accelerated work. If the individual is an operator, then the same LOE factor will also be applied to any pieces of equipment that individual operates, for the duration that equipment is used. Loss of efficiency will not be applied to any equipment downtime. Loss of efficiency will also not be paid for labor when workers are paid but not working, for example, when workers are sent home early due to rain.

No loss of efficiency will be paid for office overhead or project supervision.

EXAMPLE

The following example shows four individuals involved in an accelerated work effort, and what compensation will be paid for the acceleration under different circumstances. This example only applies to the situation in which the work is paid at contract unit prices and the acceleration costs are billed on a modified force account basis.

		Day						Time			Premium	Efficiency	
Name	Class.	Mon	Tue	Wed	Thur	Fri	Sat	Total	Std	OT	Time	Time	%
Normal Schedule													
Fred Black	LAB	8	8	8	8	8		40	40	0			
Paul Abel	LAB	10	10	10	10	10	8	58	40	18			
Ed Noonan	OP	8	8	8	8	8		40	40	0			
Theresa Birch	OP	10	10	10	10	10	8	58	40	18			

Week 1

Fred Black	LAB	10	10	10	10	10		50	40	10	10	0	
Paul Abel	LAB	10	10	10	10	10	10	60	40	20	2	0	
Ed Noonan	OP	10	10	10	10	10	10	60	40	20	20	0	
Endloader		10	10	10	10	10	10	60					
Theresa Birch	OP	10	10	10	10	10	10	60	40	20	2	0	
Backhoe		10	10	10	10	10	10	60					

Week 2

Fred Black	LAB	10	10			10	10	40	40	0	0	0	0
Paul Abel	LAB	10	10	10	10	10	10	60	40	20	2	60	0
Ed Noonan	OP	10	10	10	10	10	10	60	40	20	20	60	0.05
Backhoe		10	4					14				14	0.05
Endloader			6	10	10	10	10	46				46	0.05
Theresa Birch	OP	10	10	10	10	10	10	60	40	20	2	60	0
Backhoe		10	10	10	10	10	10	60	40			60	0

Week 3

Fred Black	LAB	10	10	10	10	10	8	58	40	18	18	0	0
Paul Abel	LAB	10	10	10	10	10	8	58	40	18	0	0	0
Ed Noonan	OP	10	10	10	8	0	8	46	40	6	6	42*	0.025
Endloader		10	10	10	4		8	42				42	0.025
Downtime					4			4					
Theresa Birch	OP	10	10	10	10	10	8	58	40	18	0	0	0
Backhoe		10	10	10	10	10	8	58				0	

* In this example, Ed Noonan actually worked only four hours on Thursday due to equipment breakdown, even though union agreements would require the Contractor to pay a full eight hour day.

Sample billing for acceleration costs for Week 1:

Sept., 1999	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	<u>17</u>	<u>18</u>	Total	Normal	<u>Rate</u>	Premium Time	Efficiency Loss			
							<u>Hours</u>	<u>Hours</u>		<u>Hrs</u>	<u>Amount</u>	<u>Hrs</u>	<u>%</u>	<u>Amount</u>
Fred Black	10	10	10	10	10		50	40	16.50	10	82.50			
Paul Abel	10	10	10	10	10	10	60	58	16.50	2	16.50			
Ed Noonan	10	10	10	10	10	10	60	40	18.00	20	180.00			
Theresa Birch	10	10	10	10	10	10	60	58	18.00	2	<u>18.00</u>			
Total:											\$297.00			

Sample billing for acceleration costs for Week 2:

Sept., 1999	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	Total Hours	Normal Hours	Rate	Premium Time Hrs	Amount	Efficiency Loss Hrs	%	Amount
Paul Abel	10	10	10	10	10	10	60	58	16.50	2	16.50			
Ed Noonan	10	10	10	10	10	10	60	40	18.00	20	180.00	60	5.0	54.00
Theresa Birch	10	10	10	10	10	10	60	58	18.00	2	<u>18.00</u>			
Subtotal											\$214.50			\$54.00
Total:											\$268.50			

Equipment	Operator	<u>20</u>	<u>21</u>	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	Rate	Premium Time Hrs	Amount	Efficiency Loss Hrs	%	Amount
Hydraulic excavator, crawler mounted, 200hp, 1.75cy bucket	Ed Noonan	10	4					76.69	14		14	5.0	53.68
Tractor loader, wheel mounted, 160hp	Ed Noonan		6	10	10	10	10	37.44	46		46	5.0	86.11
Total:													\$139.79

Total Labor: 268.50
Total Equipment: 139.79
Total billing: \$408.29

Sample billing for acceleration costs for Week 3:

Sept., 1999	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	Oct. <u>1</u>	Total Hours	Rate	Premium Time Hrs	Amount	Efficiency Loss Hrs	%	Amount
Fred Black	10	10	10	10	10	8	58	16.50	18	148.50			
Ed Noonan	10	10	10	8	10	8	46	18.00	6	<u>54.00</u>	42	2.5	<u>18.90</u>
Subtotal											\$202.50		\$18.90
											\$221.40		

Equipment	Operator	<u>26</u>	<u>27</u>	<u>28</u>	<u>29</u>	<u>30</u>	<u>1</u>	Rate	Premium Time Hrs	Amount	Efficiency Loss Hrs	%	Amount
Tractor loader, wheel mounted, 160hp	Ed Noonan	10	10	10	4		8	37.44	42		42	2.5	<u>39.31</u>
Total:													\$39.31

Total Labor: 221.40
Total Equipment: 39.31
Total billing: \$260.71

Comments:

- Premium time amounts in the above examples are calculated as one-half the wage rate (assuming time and a half overtime rates), times the number of accelerated premium time hours. It is assumed that, except for efficiency loss, that the total number of man-hours to complete the work is already included in the bid price. Therefore, payment is made only for the additional overtime charge for those hours in which the contractor expected to perform at the standard wage rate.
- No efficiency loss is paid the first week. Efficiency loss is paid on an individual, and any equipment operated by that individual, starting the second week that the individual works an accelerated schedule. A week of IDOT-directed work is eligible for LOE adjustment only if in the previous week of IDOT-directed work

the total hours exceeded the greater of 40 hours or the Contractor's normal schedule.

- Premium time is paid only for those overtime hours in excess of the individual's normal schedule or 40 hours, whichever is greater.
- In week 3, Fred Black is not paid for loss of efficiency, since his schedule in week 2 is not accelerated.
- In week 2, loss of efficiency for equipment operated by Ed Noonan is paid only for those hours in which he operated the particular equipment. The LOE rate for each is the same as the operator's, since it is the operator's inefficiency that affects the equipment inefficiency.
- Loss of efficiency is not paid for either Paul Abel or Theresa Birch, since neither individual's accelerated schedule exceeds the normal work schedule by more than 5 hours. However, both would still have been eligible for LOE pay in week 3, had their hours exceeded their normal schedules.
- In week 3, no loss of efficiency is paid on Ed Noonan's backhoe during downtime. In this example, Ed Noonan does not work for the remaining four hours of the day in which the equipment broke down, so loss of efficiency is not paid for the remaining 4 hours of the day. Loss of efficiency adjustments are applied only to those hours in which the individual actually worked or the equipment was actually used



Gary Gould
Engineer of Construction